

# COST *and* MANAGEMENT

THE OFFICIAL JOURNAL OF

THE CANADIAN SOCIETY OF  
COST ACCOUNTANTS & INDUSTRIAL ENGINEERS

INCORPORATED 1920

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## COST AND MANAGEMENT

# Annual General Meeting

**MINUTES** of Annual General Meeting of the Canadian Society of Cost Accountants & Industrial Engineers, held on April 10, 1931, at 5 p.m., at the Royal Connaught Hotel, Hamilton.

S. E. LeBrocq, Chairman. W. A. McKague, Secretary.

**Minutes of Last Annual Meeting:** The secretary read the minutes of the last annual meeting, as printed in *Cost and Management*, May, 1930. Moved, seconded and unanimously carried, That these minutes be approved.

**Financial Statement:** The secretary read the financial statement for the year ended February, 1931. Moved, seconded and unanimously carried, That this statement be approved and published.

**Report for Year:** The Chairman presented the report of the President and Directors for the year. Moved, seconded and unanimously carried, That this statement be approved and published.

**Amendments to By-laws:** Moved, seconded and unanimously carried, That the following by-law amendments, passed by the directors of the Society at their meeting on November 17, 1930, and taking effect from March 1, 1931, be approved:

That Article 1 be replaced by the following:

### Article 1. Membership

(a) Membership in the Society shall be open to anyone of age eighteen years or over, who is engaged in or interested in any branch of accounting, industrial engineering or plant management.

(b) Application for membership shall be made on the form provided by the Society for that purpose.

(c) An application must be approved by the Directors of the nearest Chapter. The Directors of the Society reserve the right to refuse admission, or to cancel any membership.

That Article 2 be replaced by the following:

### Article 2. Fees

(a) The fee for membership shall be Fifteen Dollars per year.

(b) The membership fee shall be payable in advance on the first day of March in each year. New members shall be required to pay only for the unexpired portion of the year.

(c) Any member who fails to make payment of his fee within three months from the date when it is payable, shall be liable to have his membership terminated.

That Article 5, paragraph (c) be replaced by the following:

(c) For the transaction of business at any general meeting of the Society, five members present shall constitute a quorum.

**Directors:** The following were nominated as directors of the Society for the ensuing year: L. Belanger, G. T. Bowden, G. C. Leroux, L. A. Peto, and R. R. Thompson, of Montreal; H. E. Guilfoyle, G. H. Houston, T. S. Jardine, G. M. Mulholland, R. Oaten and J. Turner, of Toronto; S. E. LeBrocq and G. E. F. Smith, of Hamilton; E. Tailby,

## ANNUAL GENERAL MEETING

of Central Ontario; W. J. Mundell and J. S. Anderson, of Winnipeg; and J. J. Plommer, of Vancouver. The chairman then declared nominations closed, and declared these, with the chairman and vice-chairman of each Chapter, duly elected directors.

**Auditors:** Moved, seconded and unanimously carried, That the Society express its thanks to Messrs. Fred Page Higgins, F.C.A., and C. H. Pelling, C.A., for acting as auditors, and that they be reappointed for the ensuing year.

**Thanks to President:** Moved, seconded and unanimously carried, That the Society express its thanks to Mr. S. E. LeBrocq for his able work and active interest in the Society as its president during the past year.

The meeting then adjourned.

S. E. LeBROcq, Chairman.

W. A. McKAGUE, Secretary.

## Report of President and Directors

Year Ended February 28, 1931

THE membership of the Society increased substantially during the past year. The following is a comparison:

	Feb. 28, 1930			Feb. 28, 1931		
	Senior	Junior	Total	Senior	Junior	Total
Montreal Chapter .....	98	12	110	120	13	133
Toronto Chapter .....	92	29	121	94	30	124
Hamilton Chapter .....	36	24	60	34	26	60
Central Ontario Chapter....	18	5	23	19	7	26
Winnipeg Chapter .....	35	10	45	29	4	33
Vancouver Chapter .....	....	....	....	33	7	40
Total .....	279	80	359	329	87	416

(Note:—Commencing March 1, 1931, the distinction between Senior and Junior memberships is abolished.)

Vancouver Chapter is an important addition to our Society. A number of members formerly on the Winnipeg list were transferred to Vancouver Chapter.

Revenue was \$6,850.94 and expenditure \$6,269.29, leaving a surplus of \$581.65 for the year which, added to the previous amount, now makes a total surplus of \$2,577.26. The Society's funds are in Canadian Government bonds and in cash. We have no investment in office equipment, and our stock of reference literature, which is extended each year, is provided for out of current revenue.

The six Chapters held a total of 55 meetings during the year. The addresses and discussions maintained the high standard set in the past.

The Chapters receive 20 per cent of the members' fees for their local expenses. The following is a summary of their financial results for the year:

## COST AND MANAGEMENT

	Balance Brought Forward	Receipts	Payments	Balance Carried Forward
Montreal .....	\$443.58	\$491.47	\$467.60	\$467.45
Toronto .....	201.96	524.00	498.92	227.04
Hamilton .....	58.11	142.25	138.51	61.85
Central Ontario .....	12.85	77.12	54.96	35.01
Winnipeg .....	73.46	152.14	54.05	171.55
Vancouver .....	.....	66.68	41.75	24.93
Totals .....	\$789.96	\$1,453.66	\$1,255.79	\$987.83

Our monthly "Cost and Management" was published regularly as usual. The activities of the past season have developed new material which assures our members of interesting issues through the summer months. A pamphlet was also published covering the by-laws and work of the Society, and the membership list.

Due to depressed business conditions, inquiries for men with cost experience were not numerous, but the Society was able to place a number of those available.

The reference library proves useful to more members each year, and the range of subjects is steadily growing.

Questionnaires were issued during the year on Handling of Personnel and on Cash Discounts, the results being published in "Cost and Management".

Two topics selected for common discussion at one or more meetings in each Chapter were Inventory Control and Practical Applications of Cost Data. Meetings on these topics were usually successful. Owing to wide differences in the dates, we were not able to reserve all material on these subjects for special numbers of our journal.

The President of the Society was present at meetings of Montreal, Toronto, Hamilton and Central Ontario Chapters, while the General Secretary also visited each Chapter, including Winnipeg and Vancouver, assisting in the organization of the latter.

Through the generosity of an anonymous member, the Society obtained a membership trophy which was awarded to Montreal Chapter for the best progress in membership during the past year; arrangements have also been made to award prizes to the Chapter Secretary best reporting his Chapter's activities in "Cost and Management", and to the member not over thirty years of age who has contributed the best paper to "Cost and Management" during the season.

Examination regulations were revised and printed in December "Cost and Management". Arrangements have been made to hold an examination in Montreal in May, 1931.

After careful consideration your directors amended the by-laws of the Society, abolishing the distinction between regular and junior memberships and setting the annual membership fee at \$15, effective from March 1, 1931.

S. E. LeBROcq, President

W. A. McKAGUE, General Secretary.

# FINANCIAL STATEMENT

## Financial Statement

THE CANADIAN SOCIETY OF COST ACCOUNTANTS  
& INDUSTRIAL ENGINEERS

YEAR ENDED FEBRUARY 28, 1931

Balance Sheet  
As at February 28, 1931

### ASSETS

Cash in Bank .....	\$ 147.73
Investments—Bonds at Cost .....	3,492.95
Interest Accrued .....	39.58
	<u>\$3,680.26</u>

### LIABILITIES

Membership Fees Paid in Advance .....	\$ 990.00
Prize Money Held in Trust	
February 28, 1930 .....	\$ 105.00
Paid During Year .....	25.00
	<u>80.00</u>
Accrued Expense	
Amount Due President for Expenses Incurred During	
the Year .....	33.00
Surplus	
Balance March 1, 1930 .....	\$1,995.61
Surplus for the Year Ended February 28,	
1931, Brought Forward .....	581.65
	<u>2,577.26</u>
	<u>\$3,680.26</u>

Examined and found correct,

(Signed) C. H. PELLING, C.A.  
FRED PAGE HIGGINS, F.C.A.

### REVENUE

Membership Fees .....	\$6,483.60
Interest .....	164.64
Publications Revenue .....	202.70
	<u>\$6,850.94</u>

### EXPENSE

General Expense, including Secretary's Salary and Expenses	\$2,823.69
Chapter Allowances .....	1,262.68
Publications Expense .....	2,182.92
Surplus for the Year .....	581.65
	<u>\$6,850.94</u>

## COST AND MANAGEMENT

### DIRECTORS' MEETINGS HELD IN HAMILTON

**M**EETINGS of the directors of the Society were held in Hamilton, Ontario, in conjunction with the annual general meeting of the Society held there on April 10.

At the first meeting, attended by members of the board for 1930-31, in addition to other business, the following prizes were awarded: The membership trophy, for the best progress in membership during the year 1930-31, to Montreal Chapter, Geo. T. Bowden, Chairman; the prize of \$20 for the best reports of Chapter activities in Cost and Management, to H. W. Blunt, C.A., Montreal; the prizes of \$20 and \$10 for the best papers by members not over 30 years of age, to S. M. Milne, Winnipeg, and G. H. Sheppard, Hamilton, respectively.

At the meeting of the new board, which immediately followed the annual general meeting, officers for the ensuing year were elected as follows: President, H. E. Guilfoyle, F.C.A., Toronto; Vice-Presidents, W. J. Mundell, C.A., Winnipeg, and G. C. Leroux, C.P.A., Montreal; Honorary Treasurer, G. H. Houston, Toronto; Honorary Secretary, G. E. F. Smith, C.A., Hamilton.

### THE TREND OF PRODUCTION COSTS

**T**HE Dominion Bureau of Statistics index number of commodity prices, with 1926 as the base period, declined from 76.0 in February to 75.1 in March.

	Mar. 1930	Feb. 1931	Mar. 1931
Foods, beverages and tobacco.....	100.2	78.1	76.4
Other consumers' goods.....	88.7	82.5	81.4
All consumers' goods.....	93.3	80.7	79.4
Producers Equipment.....	96.2	91.3	90.6
Building and construction materials.....	96.1	83.6	83.9
Manufacturers' materials.....	87.2	64.2	63.6
All producers' materials.....	88.8	67.7	67.3
All producers' goods.....	89.5	70.1	69.6
All commodities.....	91.8	76.0	75.1

The most important reductions in March were in the following: Meats, vegetable oils, rubber, fish, fats, eggs, petroleum, asbestos. The most important advances were in the following: Fresh domestic fruit, fresh foreign fruit, hides and skins, flax, hemp and jute products, silver.

### PERSONAL ITEMS

Paul E. Dufresne, who for the past two years has been in charge of the Montreal office and Quebec division of Wilson & Fessenden, Industrial Engineers of Kitchener, Ontario, has taken over the business of Montreal office and Quebec division, which he will continue under his own name, as an industrial consultant.

PREPARATION AND USE OF COST DATA

## Preparation and Use of Comparative Monthly Cost Data

### As a Means of Executive Control of Operations

By A. S. BAILLIE,

*Auditor, Granby Consolidated Mining & Smelting & Power Co.,  
Vancouver.*

(Before Vancouver Chapter, November 4, 1930)

**I**N introducing my subject this evening, may I be allowed to preface it with the statement, not new to you at all, that each year industry finds itself more concerned with costs than ever before, and executives to-day demand that costing systems must accurately reflect the variations in costs as and when these variations occur.

The costing system of any large enterprise to-day must soon be scrapped if it fails in any one of the following requisites:

- 1st—Accuracy.
- 2nd—Timeliness.
- 3rd—Simplicity.
- 4th—Comparative features clearly indicating variations as and when they occur.

I would also like to remind you that the cost accountant in charge of any system must not expect the general run of executives to see the relation between statistics and the actual operations to which they refer as readily as the trained accountant. The cost accountant is (or should be) a specialist, and he should be prepared to assemble and present statistics in such a way that he at once wins the interest and confidence of those to whom the statistics are presented.

#### Frequent Faults of Cost Systems

All too frequently we find cost accounting systems in use that are hopelessly inadequate to serve the executives concerned, for the following reasons, which should have been the business of the cost accountant to avoid or overcome:

1. They have been installed without a full knowledge of the operating conditions.
2. They have not been periodically adjusted to fit improved or changed operating conditions.
3. They fail to show unit costs for each operation.
4. They give no comparison with previous performance.
5. They reach the executives too late to have much value in assisting in decisions tending to improved performance.

#### Consult with Executives

It is evident, therefore, that in laying out a cost accounting system for any industry, it is always advisable to consider first the number and also the demands of the executives to whom statistics are to be given: also to determine the nature and details of the departmental costs to be given to the department heads and the extent to which these detailed cost reports are to be summarized for the use of those executives not interested in the details.

## COST AND MANAGEMENT

Having determined the number of executives to whom cost statistics are to be furnished, it is then advantageous to all concerned to hold a kind of round table conference at which all interested are asked to be present. The object of this conference is to bring out suggestions and constructive criticisms, with a view to incorporating in the system all information that is of value to any of the executives or department heads.

May I illustrate this point by indicating the procedure in the business with which I am connected, which operates copper mines, concentrating mills, as well as subsidiary operating and service departments at two widely separated points, Anyox and Copper Mountain respectively, on the mainland of British Columbia, and a colliery at Cassidy, B.C., on Vancouver Island. The general control of the plant operations at the above named points is maintained from the Head Office in Vancouver, B.C., to which office all plant statistics have to be reported regularly and as promptly as possible after the end of each month.

The activities at each plant are divided into departments, (a) direct operating departments, and (b) subsidiary or service departments: mine, mill, smelter, etc., being in the first named class, and supplies warehouse, mechanical shops, transportation (at Anyox we operate our own short line electric railway and docks) and townsites, including living quarters occupied by the employees, boarding-houses, mess-houses, store, etc. Branch accounts are kept at the accounting office maintained at each plant, controlling inventories of ores, metals, operating supplies, payrolls, etc., and the superintendents of departments meet in conference with the general superintendent of the plant at regular intervals to consider the operating results disclosed by the cost figures prepared and submitted by the plant accounting staff to determine the reasons for variations as compared with previous periods, and discuss matters of betterments, future policy, etc.

### Avoid Duplication

To come back to the matter of our suggested round table conference at this initial conference of executives, it is important to stress the necessity of eliminating duplication, not only in the accumulation of statistics, but also duplication in the methods of assembling them for the various reports, because if such an understanding is not come to at the time the system is installed, it will be found later that reports must be rearranged and retyped to meet certain whims, resulting in needless expense, as well as in slowing up the compilation of statistics, some of which are highly important to certain executives upon whom the responsibility for the operations rest, and which should be in their hand at the earliest moment after the end of the month or other set period.

Duplication of effort in the accumulation or reporting of statistics can readily be eliminated by first of all deciding what detail is essential to give every one concerned a complete picture of operating results in terms of quantities, money values and units of production costs, and variations in the factors of such unit costs. The main segregation of cost units being determined, the next step is to embody in a schedule of charge account or expense distribution key numbers, all necessary factors for developing the cost of each main item of operating expense, as well as each element contributing to the make-up of such items.



## PREPARATION AND USE OF COST DATA

### Classification of Accounts

The system of classification of operating accounts used by us is that of alphabetical letters to indicate separate departments, and numerals to indicate the sub-classification or nature of the departmental operations, i.e.:

#### Departments:

Mining "A", Mill "B", Smelter "C", etc.

#### Departmental Operations:

A100, A101, A102, A103, etc. (at Mine)

B100, B101, B102, B103, etc. (at Mill)

C100, C101, C102, C103, etc. (at Smelter)

In outlining the charge account numbers or distribution key, ample provision should be made for adding from time to time additional accounts that may be necessary to cover operating changes or enlargement of departmental activities.

By means of the above classifications, all the main factors of production costs, labor, supplies, service charges, overhead expenses, etc., can be readily and properly apportioned as between the operating departments, and the next step is to determine the speed, consistent with accuracy, with which the departmental data can be compiled at the end of each operating period, monthly or otherwise. The secret of rapid accumulation of data, as well as its dispatch or presentation in the form of reports, lies principally in arranging that the assembling of relative departmental figures through the various accounting channels be done with a minimum of effort and the elimination of posting data from one record to another except where such procedure is absolutely unavoidable. For instance, to illustrate this point a little more clearly in regard to labor costs; you will have often found in use a system under which (a) clerks in the various departments of a business report their labor distributions to a central accounting or costing office on a certain form of standard report, which in turn (b) is posted to some form of synoptic register in which all labor charges from every department are accumulated, from which again (c) the labor statistics are posted into a permanent cost register, from which (d) the final cost statements are made up.

### Departmental Work Sheet

To avoid such duplication of effort and its attendant waste of time, we have designed and use at each of our plants a tabular form of Departmental Work Sheet, all on the same general lines as regards the various departments, but with the necessary variations relative to the nature of operating expense classifications for individual departments. The column headings on these sheets are similar covering labor costs, supplies used, service charges from sub-departments, miscellaneous expense charges, etc., and all elements of cost are posted direct to these sheets as soon as such elements are determined. Labor costs are posted by the timekeeper for the individual department; operating supplies amounts posted by the warehouse department staff; charges for services rendered by the subsidiary departments, based on agreed rates, are supplied by such departments to direct operating department clerks. By this means duplication of posting is entirely eliminated, as well as the possibility of errors in transposition of figures or entry of items to wrong departments, dangers which always exist in systems under which department records are posted in a general office to and from several records before final compilation.

## COST AND MANAGEMENT

The columnar work sheets used in our system, after having been posted by the department clerks with all labor, supplies and service charges, are then sent to the main accounting office, where charges from the voucher register or journal, for miscellaneous expense items, etc., are posted direct to the sheets; following this, the sheets are totalled, and the details transferred to comparative cost statements designed to show clearly the unit costs for the main sections of our operations for each current period and the relation of these figures to similar dates for previous months.

It is difficult for me to picture by word just how much time and expense can be saved by this system of direct entry by department clerks. However, it will be seen that there is no duplication of posting by such procedure, and when the departmental work sheets are finally totalled and balanced and agreed with the general office operating ledger control totals, they constitute a permanent record of operating results fully classified by departments and expense units. The number of columns and the segregation of expense units contained on the sheets depend of course entirely upon the amount of information it is desired to reflect in the detailed cost statements.

### Costs Ahead of Other Records

I might mention at this point, that in laying out a system for quickly accumulating cost data designed to give all the information required by executives or departmental heads, much can be done to facilitate the rapid compilation of these figures if the accounting procedure throughout the entire business organization of plant unit is so arranged that the costs are developed first, and the various analytical statements, as well as the balance sheet and profit and loss statements compiled later. The reason for this reversal of what might be called the usual method of accounting procedure is the fact that all departmental clerks, if the work sheet method outlined above be followed, can be used on cost work for the first day or two after the end of the month or other set period, following which the general office staff can complete the work sheets and cost data and the closing of the general books. The department clerks in the meantime can help out the general office staff by closing payrolls, entering deductions, writing pay cheques, etc., and dealing with other routine work to be incorporated in balance sheet statistics, departmental analytical data, etc.

A distinct advantage in developing the department cost data at the end of each period before the closing of the general books or in preference to compilation of other statistical data or financial statements lies in the fact that as the final costs for a period are entered on the comparative statements above mentioned, any fluctuation or radical variation from previous costs is immediately thrown into relief. If, on investigation it is found that an error has been made by posting some item to a wrong classification, the necessary correction can be made before the statements are typed, and inaccuracy due to clerical error thereby avoided. If, on the other hand, the variation as to amount is found to be correct, but is sufficiently out of average to call for an explanation, such explanation can be covered by a foot note on the cost statement for the month, or in a cost letter accompanying the departmental cost sheet when this is passed forward

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to the executives. The system used by us to catch such variations is to develop the cost figures on our statements in figures of dollars and cents in total money amounts and also in dollars and cents per unit; then to tabulate the figures immediately in comparative form on statements already prepared which contain similar cost data by individual months for the current year to date, together with similar monthly averages for the two individual annual periods preceding the current year. Quantitative tonnage and poundage figures are also inserted in the statements where considered necessary or desirable.

The tabulation of costs on the comparative statements as above mentioned, and investigation of differences, not only by the accounting staffs, but also by the department heads in cases where more than average variation is disclosed, practically eliminates the usual adjustments and suspense account, the use of which is so frequently abused when cost information is required quickly at the end of an operating period, and which is also such an irritant to executives when costs are subsequently distorted in later periods when the adjustments are picked up.

### Statistics in Comparative Form

A further advantage arising from the compilation and verification of costs by the work sheet method immediately after the close of the operating period is that it makes practically certain that by the time the general books of the business or plant unit are closed and the balance sheet and profit and loss statement drafted, the summary sheets of each department's costs are ready also, with as much detail available as may be required for the information of the general executives, either in condensed or in extended form, and with explanations of variations that may be evident in the costs of any department as compared with prior periods.

In conclusion, may I say that in my own opinion and as a result of my observations, I believe that one of the most important means by which cost accounting can be of service to an executive, is by reporting statistics in comparative form, giving the executive a picture of what has happened in prior periods, as compared with the current operating results. If figures are not reported in such form, it means that the executive must be put to considerable trouble and inconvenience to obtain such a comparison, or otherwise must be content to rely on generalities or memory for such information, and it certainly means that his accounting department is not rendering him the service that, properly organized, it could render. To-day, much more than in earlier times, the demands made upon executives, either those acting in an operative or general administrative capacity, are too great to permit such officials spending much of their time on clerical work. For their assistance and guidance, therefore, the accounting staff should see that comparative data on every vital factor in the business or department is compiled in such order that the executive concerned will have before him in clear, concise and accurate form and detail all the information necessary to give him a thorough insight into the financial results of the operations for which he is responsible. This information, if provided accurately and promptly, will give such an executive a greater respect for the cost accountant and a realization of the value of a properly organized accounting department as a vital part of his business organization as a whole.

## Advantages of Industrial Engineering

By P. E. DUFRESNE,  
*Industrial Engineer, Montreal.*

(Before Montreal Chapter, November 6, 1930)

THE occupation of the engineer is to improve manufacturing businesses by careful study and investigation of all the elements that contribute to cost, such as labor, machines, plant, material, in order to obtain the best possible results with resources available.

Any improvements which involve capital expenditure are put to a mathematical test to determine their value as an investment, and must also be in accordance with the means and policy of the company, as in several cases it is better to throw the cargo overboard than to lose the whole ship.

The engineer comes into a plant to assist the manager, the superintendent, foremen and men, as in all business this personnel is fully occupied by daily routine such as:

- Production schedule,
- Quality,
- Inspection,
- Purchases and ordering of material,
- Supervision,
- Shipment,
- Special orders,
- Designs,
- Clerical routine,
- Financing,
- Collection.

They have not sufficient time to make thorough study of many problems which offer good opportunities for improvements.

The industrial engineer is specially trained to supplement this phase of management through his practical experience in many industries, and to apply just and reasonable principles to the changing life of business.

### Problems of Management

The management wants lower costs, more productions. The employees want more pay, better working conditions. A condition which will satisfy both can only be found through a general increase in efficiency.

- (a) Efficiency of labor: Direct and Indirect;
- (b) Efficient use of materials: Direct and Indirect;
- (c) Efficient use of plant: Equipment and Buildings.

These results are obtained through a

- 1° Better methods of wage payment;
- 2° Foreman's bonus plan;
- 3° Waste elimination and study of materials;
- 4° Better methods of manufacture and factory layouts;
- 5° Production control methods;

## ADVANTAGES OF INDUSTRIAL ENGINEERING

- 6° Manufacturing budgets;
- 7° Accurate costs;
- 8° Control and reduction of factory expenses.

Labor, Material and Plant, although distinctly different, can all be reached through close study of labor, as it is the medium through which most weaknesses are traced. By making a detailed study of labor, one is bound to check up on:

- Direct and indirect materials,
- Machine conditions,
- Layouts of machines and benches waste.

Often cheap labor is found to be the most expensive in cost. One of our clients, for instance, hired old men at low rates for trucking about the shop. As soon as new standards were set in this shop, and men were placed on bonus wage methods, this cheap labor was found to be costly, as it was the cause of considerable delays to the workers. When on day work the men were not interested to report such delays, but when placed on bonus rates they complained of losing  $1\frac{1}{2}$  to 2 hours per day. After investigating, these truckers were replaced by younger men at same rates of pay, but with an additional bonus for any direct work they could do outside their regular trucking.

These men did all the trucking in 7 hours and spent 3 hours doing direct works on a percentage basis, which resulted in:

- (a) savings of 20% in trucking cost;
- (b) increase in wages to truckers;
- (c) better supply of material to direct workers.

Honest, skilled, efficient, and interested workers is one of the best assets of a manufacturer. No doubt, that with the improved and considerable use of machinery of to-day, manufacturers are less dependent on labor as for quantity, but not quality, because poor labor is the cause of idle machines, poor quality, increase waste, etc.

### Effects of Reducing Wages

One method which unfortunately is often used to reduce labor cost, but which is very detrimental to industry, is by reducing the employees' pay, unless it is based on general wage adjustment due to economic conditions. Such reductions are detrimental because it causes employees to:

- (a) Lose faith in their employer;
- (b) Lower their standard of living;
- (c) Decrease their purchasing power;
- (d) Thereby reducing the demand.

Henry Ford who is an outstanding authority on industrial management has just published a book entitled "Moving Forward," in which he predicts that by the year 1950, American workers will be earning \$27.00 per day, and will share the luxury of the American Society of to-day. He bases his prediction on the advance of wage scales since 1910, when the hourly wage in his plant was 25 cents per hour, compared with an average of \$1.00 for January and February,

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1930. If wages have been multiplied by four in twenty years, he claims they should increase by more than that in the next twenty years. Mr. Ford has set a striking practical example of high wages with low cost due to increased efficiency. All his up-to-date equipment would be of little use without efficient labor.

The only satisfactory way to decrease labor cost is through modern wage payment methods. It is no use to push the men as it is against their human nature, and even when the best and closest of supervision is used further improvements can be made which average from 10% to 30%.

Good permanent results are only obtained by inducing the men through what is most important to them, "THEIR WAGES."

If you want more production,

If you want less waste,

If you want better quality,

If you want your foreman to be more interested in costs, production, quality, induce them through higher wages. Pay for results, but be sure you get results. The success rests in using the proper wage method and a simple system which the men will understand.

### Present Conditions

Conditions generally found in manufacturing plants are:

- (A) Men paid day work with no time cards. The labor cost is entirely based on estimates. The manufacturer sells his product before knowing what it really cost, and trust to luck for profit.
- (B) Men paid day work with time cards. The cost is based on averages made from cost records.

In either case the cost is bound to fluctuate, and such post mortems cost data is of little use for cost reduction and control. If estimates are made too low it results in a net loss. If estimates are made too high it results in loss of business. A business cannot progress under such conditions unless it has a monopoly on the market. Another conditions is:

- (C) Men paid P.W. with rates set by estimates or generally better called guesstimates. These are eventually found too high as the labor will usually get the best end of the stick. They invariably slow down only to speed up when rates are set.

- 1. Rates are then reduced;
- 2. Workers are dissatisfied;
- 3. Production is restricted to prevent further cut.

Standards set in a haphazard manner are usually the cause of serious losses in overhead due to inefficient use of equipment and factory space.

### Wage Methods

There exists a number of wage payment methods:

- 1. The hourly basis is the simplest for calculating the pay, but inaccurate and complicated when it comes to predetermine accurate costs.

## ADVANTAGES OF INDUSTRIAL ENGINEERING

2. The straight P.W. Bases. It is the most generally used wage incentive method, but its use is limited to jobs of highly repetitive nature. One of its disadvantages is that it makes the workers totally responsible for the labor cost, and unless such rates are very accurately set, workers will beat the rates and take the total savings, which should be shared by the employer.
3. More up-to-date wage methods which find great favor among large leading companies are the bonus plan, whereby the employee and employer both share part of the responsibilities of labor cost as well as share in the savings made due to increased output.

Such methods bring closer co-operation between owner and worker as they are equally interested in lowering costs.

Its uses is much broader because the operator's share in the savings can be varied from 10% to 80% of the total depending on the nature of the job.

### Material Economy

In many instances the raw material used is far more important in cost than the labor as in the case of:

- 1° Cutting up rough lumber for furniture where a man can waste several times his wages;
- 2° Cutting leather for shoes and gloves;
- 3° Cutting cloth and rubber coated fabric for footwear and tires, etc.
- 4° Cutting and manufacturing of paper.

In such cases to induce workers to increased output might result in considerable waste and the loss might be several times greater than any possible labor savings.

A. On one hand increased production is wanted;

B. On the other hand decrease in waste.

The happy medium can be obtained by paying the men a counter-balancing bonus for increased production and reduction waste. The important factor is to get the right balance taking into account the value of labor and material, and to teach men how they can earn the maximum bonus.

Savings in material is generally far in excess of labor savings, but to pay a bonus exclusively on material economy will be subject to reduction in production, which may necessitate purchase of expensive machines and increased overhead cost.

On cutting material in one plant savings over \$100 per man per week, or a total for eight men of \$40,000 per year. On large machines such as paper making, considerable savings can be made due to the large initial cost of the machine and operating expense.

The main purpose of the wage incentive method, is to keep the cost to a standard, which is representative of the efficiency of the plant.

It is very important to first increase the efficiency and then set the standards.

## COST AND MANAGEMENT

In a small plant where the waste from cutting the raw product averaged 30%, an investigation was made, and through accurate study it was proven that the waste could be reduced to 24% with possibilities of reaching 21%. The men were given a bonus of 3% in wages to keep the waste at 24%, with an additional bonus for any reduction below 24%. Following this the waste was eventually reduced to 20½%, which resulted in increased earnings to the men of over 12%, and savings to the manufacturer of over \$9,000 per year.

### General Procedure

The sequence to be followed to increase the general efficiency of the plant is:

- 1° Investigation.
- 2° Establishment of standard conditions.
- 3° Determination of standards.
- 4° Development of method for the maintenance of the standards.

The purpose of the investigation is to determine the activities the study is to deal with, and to work out the best working conditions.

This problem resolves itself into a question of service to the operator, and the requirements are somewhat as follows:

1. First-class conditions of the work station:  
(Machines, belts, tools.)
2. Adequate floor space and layout:  
(too much walking, too much congestion.)

In the ironing department of clothing plant (which was the neck of bottle) a change in the layout and construction of benches gave space for 40% more producers in 20% less space.

3. Adequate and proper tool supply:  
(Do operators get their own tools, sharpen them, make their own patterns during which time the machine is idle.)
4. Control of the product to and from working stations. (In manufacturing plants, chutes fade from one floor to another replaced 4 truckers.)
5. Handling of product at work station:

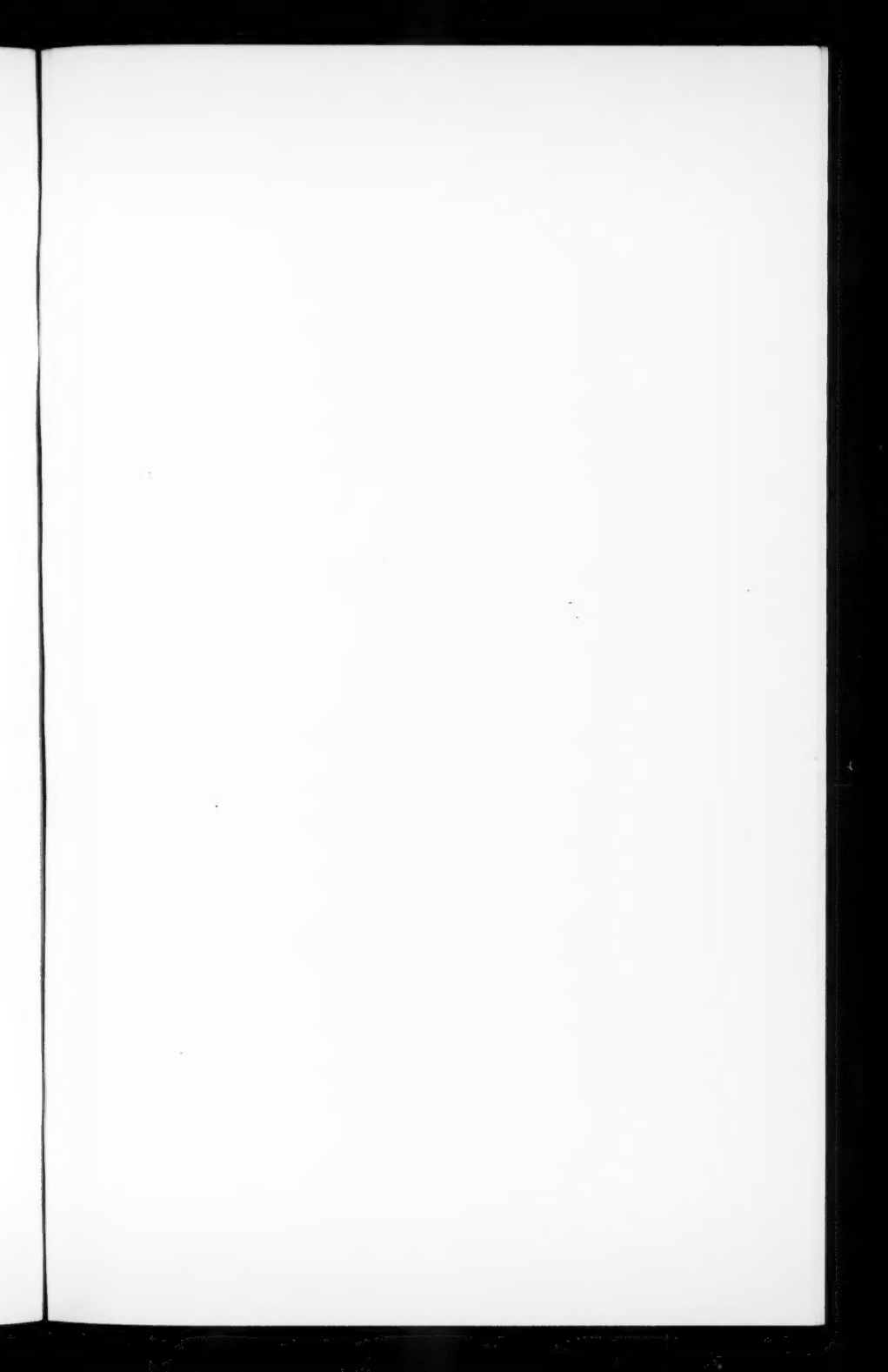
In a leather footwear plant small slides were made to pass the shoes from one machine to another. The purpose was to get an increased output with the same last equipment. The usual method being to have a rack full between the machines.

6. Method of operation:

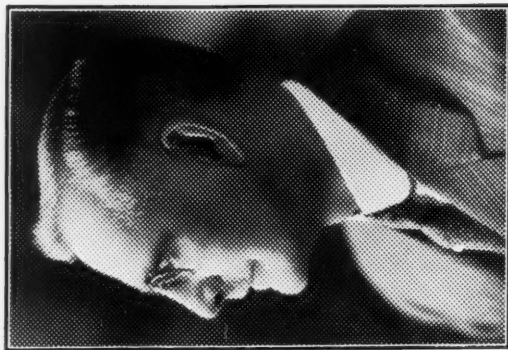
Another instance taken from a footwear plant is in the building up of heels. The girls were taught to work with their two hands, which resulted in 5 girls doing the work of 8 previously.

7. Inspection.
8. Instruction.
9. Lighting.
10. Heating.
11. Ventilation.
12. Safety.
13. Supervision (too much or too little clerical work).

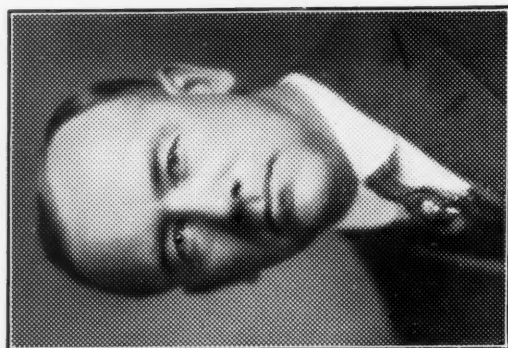




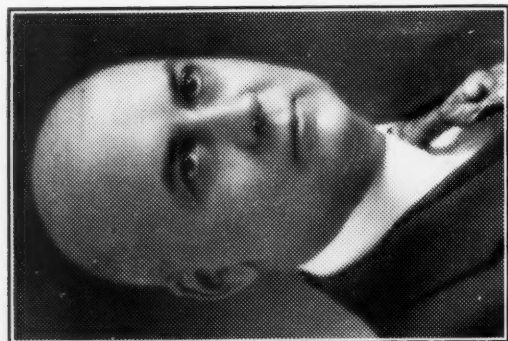
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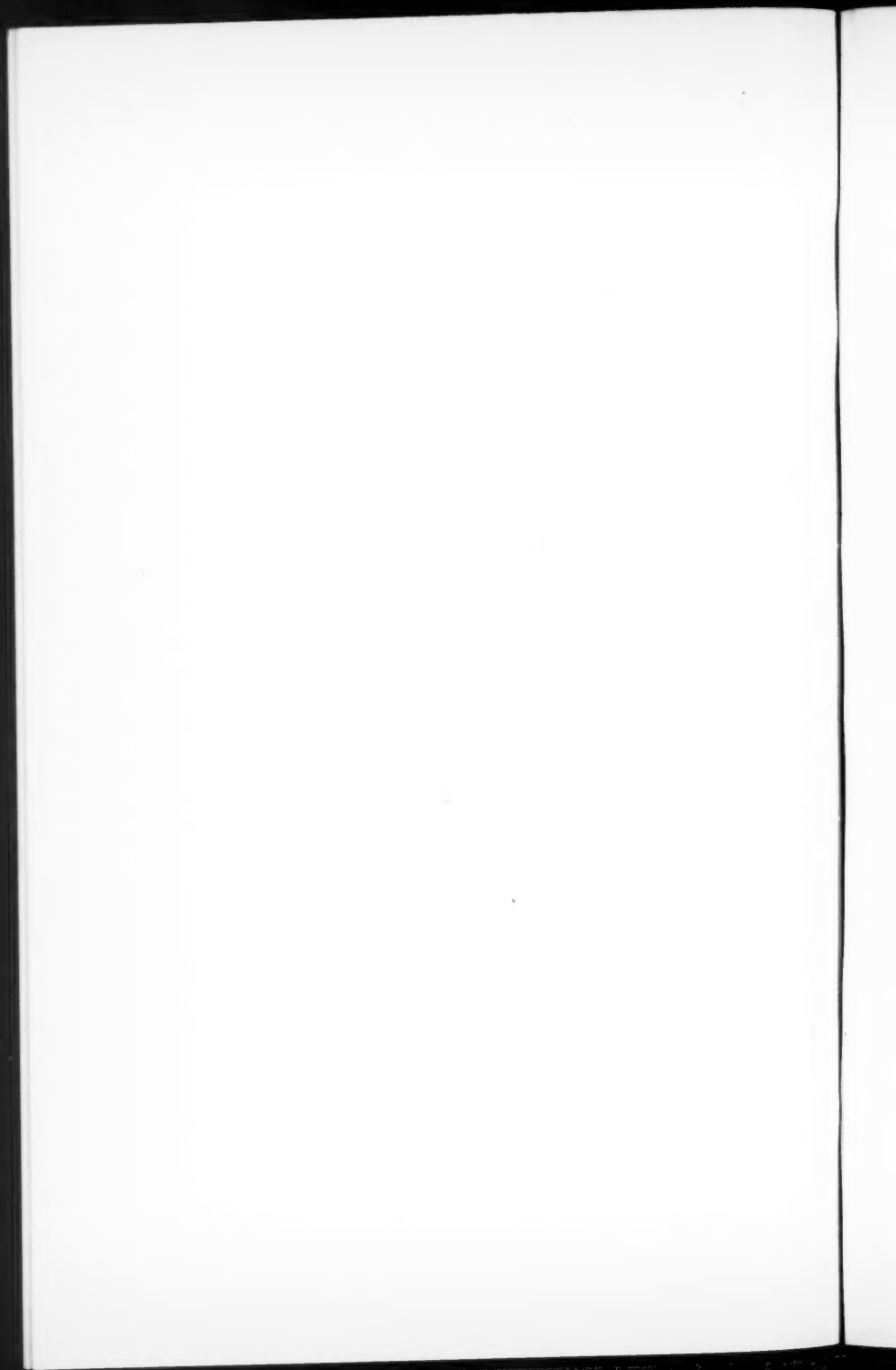
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## ADVANTAGES OF INDUSTRIAL ENGINEERING

During the investigation the engineer does not get his data from past records, but builds up his information from actual observation and time studies in the plant so as to deal with accurate facts.

### Reduction of Clerical Work

The system installed for the maintenance of standards, for the calculation of the pay, and for costing must be simple. It would be bad practice to save money in the factory and spend most of it in clerks' salaries in the office. Unless a plant has absolutely no system at all to keep track of costs, wages, etc., it is generally found that the present records can be used and in many cases it is possible to reduce the clerical work.

#### *A Few Instances Where Clerical Work Was Reduced:*

The old system consisted in making **one card per day per operator**, which were collected, extended, and posted on the payroll every day. This was replaced by a weekly system consisting of **one report per operator per week** for direct labor; **one report per department per week** for indirect labor. The old method required 1545 cards per week. The new method requires 74 cards per week. This weekly system decreased the clerical work in:

1. Foremen's office.
2. Payroll department.
3. Cost department.
4. Card printing department.

In a footwear plant the system consisted in:

One ticket per operator per day and was changed to one ticket per team per week.

The weekly tickets were reduced from 3,000 to 340 or 88%.

### Factory Budget

The whole system is then summed up into a monthly factory budget:

Its purpose is to show where every dollar is spent, and sets a basis for economy, and to establish future expenditures.

It is the key to the system, and reflects the efficiency of departments as to:

- 1° Direct labor,
- 2° Indirect labor,
- 3° Factory expense,
- 4° Material expense,
- 5° Direct materials.

It is the basis for costing and shows the monthly profit or loss based on factory output.

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## Cost Studies on Proposed Changes in Processes

By C. E. SHUMAKER,

*Personnel Manager, The Goodyear Tire & Rubber Co.  
of Canada, Limited.*

(Before Toronto Chapter, February 18, 1931.)

A DETAILED consideration of all the elements that must be covered in making a cost analysis of proposed changes in manufacturing methods would require more time than can be devoted to this subject in one evening. I will, therefore, cover the subject in only a general way, as I understand this is to be followed by a general discussion of the details that are of the most interest.

A cost study may be defined as meaning a detailed analysis of two or more methods that may be applied to a manufacturing process to determine as nearly as possible the exact cost of the different methods.

For the discussion of this topic I will divide it into two parts. First, the purpose or reason for making cost studies on proposed changes. Second, the method to be followed in making such studies.

### Purpose

The primary purpose of making cost studies on proposed changes is to eliminate guess work in management decisions, and to assist in the proper development of new ideas.

Successful industries are frequently given credit for their position to the use of scientific methods in their management. One very definite way to apply scientific methods in industry is to base decisions on data that has been carefully collected and analyzed and results predicted accurately. Any changes in manufacturing methods are usually made either to increase quality or reduce cost. No industry can afford to increase its quality without having a clear understanding what that increased quality will cost or whether or not that cost can be recovered in a competitive market. If a change is being considered to reduce cost, it is unwise to make any expenditure along this line, unless it is definitely known to what extent the cost will be reduced.

An industry to progress and develop must have within its organization members with ideas and visions, particularly relating to the development of methods and processes. To make use of this an organization must provide means by which these ideas can be analyzed, as to the economical application to the individual industry.

To carry this out satisfactorily I believe these cost analyses should be made a definite and separate function and should not be a side line to another job in an organization.

## COST STUDIES ON PROPOSED CHANGES IN PROCESSES

Specialization has been a big factor in the progress of present day industry. This rule should also be applied to this type of work, and the person or department carrying on this work should be thoroughly familiar with all the processes the product goes through and the various items of expense that make up the cost of the product.

### Method To Be Used

It will not be possible to discuss in specific detail the methods to be used in making up costs on proposed changes, since each study will vary somewhat according to the particular change considered. However, in order to apply our remarks a little more specifically, let us assume that the change under consideration is the installation of an automatic machine that will take the place of a manually operated machine. The cost elements that will have to be considered are, of course, in general, labour, material and overhead. It is not necessary, and is usually confusing, in making such a study to consider the total cost of the product. The only cost items that need to be considered are those that will be variable due to making the proposed change. The product ordinarily will go through a number of processes, and this proposed machine would only perform the work of one of these processes. Consequently, we can confine all our efforts on the cost of this one process. I would suggest also that all the variable items under the present method be analyzed and totalled before any attempt is made to get the cost by the proposed method.

Following this thought, we would first consider the labor of the manually operated machine. In all probability there will be data on hand, showing what the cost is. If not, the individual making the cost analysis will have to take a time study of the operation and not only determine the present actual cost but what would represent a fair standard cost under this method. Similar data will have to be compiled on material, if the installation of the new machine is going to cause any changes in material specifications. If there will be no variables in the material, this item can then be omitted.

In the average industry overhead is the most difficult thing to analyze, as it applies to a specific operation. It is frequently the practice to recover overhead over a group or series of operations based on direct labour or on machine hours.

I might remark here, parenthetically, that I feel that Cost Accountants have yet considerable development work to do in allocating overhead costs, so that they can be applied more specifically to individual operations, particularly in studies of this kind.

It is very misleading to use an overall figure in making such a study as we are discussing. The proposed machine while making the savings in direct labour may make an increased cost in overhead, which would be overlooked if percentage overhead is used in calculating the overhead cost. An ideal way is to analyze the overhead items and consider these item for item that will be affected by the proposed change. This may cover such items as supervision, inspection, floor space, maintenance, waste or indirect material, electric power, water, etc.

## COST AND MANAGEMENT

After all the variable items under the present method have been analyzed and costed they must be reduced to a common unit. They can then be totalled for the cost of the present method.

The next step is to make a similar analysis of the proposed or automatic machine method. Since there will be no actual data available these costs will have to be estimated. The machine, of course, has been designed to give a certain production in a certain unit of time. An analysis of the machine itself will give you an idea of the amount of labor necessary to operate it.

From the consideration of these factors the direct labor cost can be calculated. It will then be necessary to make a study of the material and overhead items in the same way.

Some comment probably should be made on the question of depreciation for a proposed machine. Depreciation if considered would ordinarily be one of the overhead items, but if a proposed machine is charged with depreciation and at the same time must pay for itself through savings it develops, then by charging depreciation in the proposed method means that the machine must pay for itself more than once. It is frequently a practice for this reason not to charge depreciation in studies of this nature.

In making the estimates for the proposed method it is usually best to contact with the departments who will be responsible for the proper operating of the proposed method. These same departments should then have the opportunity of approving the study, after it is completed.

It is also desirable that a close contact be maintained with the Cost Department in this work. Much of the data used in the study will probably be secured from the Cost Department, and this department will be expected to show the effect of any change in process on the final cost of the product. It is good practice to follow up any change in method until the savings resulting from a new method have balanced the expenditure required to make the change.

After the cost per unit has been totalled for the two methods, we would have recorded the savings or loss to be expected per unit. Extending this by the estimated production we can determine the savings or loss for a day, month or year.

The study should also show the total estimated expenditure required to make the proposed change.

In connection with this, consideration should be given to any un-depreciated value of equipment that may be discarded, as would be the case in the change considered here, also the resale value if any. The result may be a debit or credit to the proposed method.

Another item that may be given some thought is the question of interest. There may be some reason for charging interest as an expense item against the investment for a new machine, since interest on the investment represents an actual or potential earning capacity for the Company.



## COST STUDIES ON PROPOSED CHANGES IN PROCESSES

I believe, however, it is not the usual practice to charge interest to manufacturing costs, and in this respect the cost analysis should conform to the accounting procedure, and thus be in agreement on the savings resulting from a new machine.

The final point for consideration is how much savings should be anticipated before the proposed change is adopted. That, of course, is a matter of policy, which must be determined by the individual management. If an industry is one in which processes or equipment rapidly becomes obsolete, it is necessary that the saving of any change must pay for its cost in a reasonably short time, say in a year or less. In other cases it might be just as good business to allow a much longer time.

The above outline is, of course, applied only to a proposed change for cost reduction and assumes that there will be no effect on quality.

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## The Beauharnois Development

By RIELLE THOMSON,

*Advertising Manager, Beauharnois Power Corp., Ltd.*

(Before Montreal Chapter, November 20, 1930.)

**M**AY I express, first, the sincere appreciation which I feel at being asked to address your Society. Mingling in my breast with these feelings of appreciation there is also that apprehension which always comes to the layman, who, perhaps unwisely, endeavours to expound his views or beliefs to those having a specialized training.

However, I am fortified this evening by the presence of two of my confreres. They will, I hope, rally to my assistance, should you ask question which I am not competent to answer. Please do not hesitate to interrupt me, if any questions arise in your mind during the course of my remarks. Questions will not divert the somewhat wavering trend of my ideas.

Both by word and by picture, I am this evening to tell you something of the Beauharnois Power Development.

### Outline of The Project

In essence, the project consists of an overland canal connecting those two wide reaches of the St. Lawrence, known as Lake St. Francis and Lake St. Louis. As the route of the canal lies entirely below the level of the headwaters of Lake St. Francis, the water will be led between two dykes half a mile apart, to the power house at Beauharnois, where in a single stage development, will be generated 500,000 horsepower over a head of 83 feet.

The development will divert about a quarter of the total flow of the St. Lawrence around the entire Soulanges section of the river. In the canal itself will also be excavated a navigation channel, 27 feet deep and 600 feet wide. On the completion of the canal and the channel in its bed, the Government can install the two necessary ship locks at the Beauharnois end of the undertaking. This would provide deep water navigation facilities in all the wholly-Canadian section of the

## COST AND MANAGEMENT

St. Lawrence, save the short stretch around the Lachine Rapids at Montreal.

Canada is already engaged in providing deep navigation facilities between Kingston and Prescott. The remaining stretch of the river between Prescott and Cornwall is known as the International Rapids section, which must be developed jointly by Canada and the United States for navigation and power.

My movies will reveal the construction methods employed on the Beauharnois undertaking—just what my words will reveal I don't know—but I venture to hope that I can convey to you some of the broader aspects of what is after all something more “than just another power development”.

Beauharnois affects the St. Lawrence river—and what affects the river, affects the nation. The St. Lawrence is something bigger than just a source of power. The overseas and inland transportation facilities, which it affords, are alone responsible for a very large proportion of the commercial wealth of the nation.

And so, the broader picture of Beauharnois falls into two divisions—both within the same frame; its industrial and its navigation aspects.

### Deep Waterways

I have not the time, and probably you have not the inclination, which would allow me this evening to discuss the pros and cons of the St. Lawrence Deep Waterways project; nor do I wish to appear in the role of antagonist or protagonist of that important undertaking.

But, in assessing the ultimate national affect of the work now underway on the new Beauharnois canal, I think you would be unwise to minimize its effects as a major component of the deep waterway scheme.

Montreal opinion, and perhaps the opinion of this gathering, is antagonist towards the further deep water development of the St. Lawrence. But before you are convinced that the waterways is a Chimera, and Beauharnois part in it of little importance, you must be prepared to prove that the waterways are unsound economically. Before saying that the waterways are unsound economically, you must be prepared to measure their cost against the annual benefits which would accrue to the Dominion through their completion. Some of these benefits can be measured accurately in dollars and cents.

As the new Welland Canal has been completed, the cost of providing deep water facilities between the Upper Lakes would run only to \$65,000,000. Now that Beauharnois is underway, the cost of providing deep water navigation between Montreal and Kingston would run from about \$100,000,000 to \$180,000,000 depending on the fashion in which the costs are apportioned between the power and navigation in the combined development. The United States would be willing to absorb a large proportion of these costs as a quid pro quo for Canada's expenditure of \$125,000,000 on the new Welland Canal.

To be measured against the costs, there are the benefits, which would accrue through the completion of the waterways. The cheapest form of transportation known to mankind are the Upper Lake freighters. Most economists, whether opposed to, or in favour of the

## THE BEAUHARNOIS DEVELOPMENT

waterways, are greed that the movement of these ships down to the port of Montreal would provide savings of between 3 and 4c a bushel on Canadian grain moving overseas. In the past, the grain has been transhipped at Port Colborne or Buffalo, and has moved down the St. Lawrence in the canal boats. Montreal has exported over 50,000,000 bushels of Canadian Wheat in three different years since 1922—wheat only, not grain. The savings of 3c a bushel on such a movement would go a long way to meeting the annual interest charges on the capital invested in deepening the river between Lake Ontario and Montreal. And although I have the time this evening only to mention one type of cargo, there are similar savings, which would accrue on other cargoes. In addition, the movement of the Upper Lake freighters directly to Montreal, would tend to increase the flow of U.S. traffic through this great port. The completion of the waterways would increase materially Montreal's prestige as an important transshipping point. And to its shipping facilities alone are attributable this city's commercial supremacy.

There are other less tangible benefits which would accrue from the waterways. Such savings can not always be measured in dollars and cents, yet there are very real economic benefits to be obtained. For instance, Montreal is at present just about the westerly limit of the movement of Nova Scotia coals. The deepening of the river might open a wider market to the Nova Scotian coal mining industry.

### Power Available

Between Montreal and Prescott there is 4,000,000 h.p. available to Canada in the St. Lawrence. Much of this power can and will be used in Montreal and the district surrounding this city. It would benefit Montreal materially to have much of this power transmitted into the region. On the other hand it might cost about \$2.00 a horsepower a year to bring half the power available in the Soulanges section alone down to the Island of Montreal.

In certain of our modern industries, particularly the electro chemical and the electro metallurgical industries, the cost of power represents an important and substantial part of the total manufacturing cost. Thus, if deep water navigation were brought to the power site, the transportation facilities available to markets plus the low cost power of the St. Lawrence could not fail to increase industrial activity along the upper St. Lawrence basin—a development holding important indirect benefit to this city. In other words, if we make our power cheaper by bringing deep water navigation facilities to one power site, the greater must be the industrial trek to Canada.

Another aspect of the waterways is of importance—although it is given very little consideration in this country. If Canada refuses to work with the U.S. in the greater development of the river, who shall say that the U.S. will not take active steps to divert much of the U.S. traffic now passing through the port of Montreal? There always exists the threat of a wholly American route from Oswego on Lake Ontario to Albany on the Hudson. And the Hudson is already being deepened up to Albany for ocean-going vessels. Even should it prove too costly to deepen the New York State barge canal, the U.S. is wealthy enough to provide railway facilities between Oswego and Albany at a cost to compete with navigation on the St. Lawrence.

## COST AND MANAGEMENT

It is easy to come to wrong conclusions on the waterways with an insufficient knowledge of the facts. Now I am not competent to give you all the many and varied facts surrounding that great project. I hope, though, that I may have been able to suggest to you a few lines of thought on this important topic. But to those of you who—unlike myself—are in possession of all the facts, and who are still opposed to the deep waterway development of our great river, I should like to ask a question. If the improvement of the navigation facilities in the river to a depth of 27 feet be unsound economically, how deep should the channels in the river be? Is there some special technical or nautical reason why the existing 14-foot channels should remain as they are? Or should these be deepened to 18, 23 or 27 feet? I have never yet had this question answered satisfactorily by those most vehement in their opposition to the further development of the river.

### Industrial Effects

Now may I turn for a moment to the industrial effects which the power development of the St. Lawrence will produce on Canada in general, and in those areas along the St. Lawrence in which we here this evening are most vitally interested.

The St. Lawrence Basin, between Montreal and Kingston, is destined—perhaps shortly—to play a prominent role in the drama of world commerce, and I'll tell you why.

Scattered throughout our north country are tens of thousands of lakes which feed the Great Lakes. The Great Lakes in turn feed the St. Lawrence. The Lakes act as the greatest natural reservoir or storage basin in the world. As a result the flow of the St. Lawrence, from the standpoint of power development, varies immaterially from year to year and from season to season.

This means that the river can provide continuous power for 365 days in the year. Virtually all other countries are not so fortunate in their water power resources. The flow of their streams must be augmented at certain seasons by steam plants or by other sources of power. Or else expensive artificial storage facilities must be created, thus increasing the cost of producing power. The United States, South America and Mexico have not the abundant lakes to provide an even flow in their rivers. Fluctuations in the flow of their streams are violent—variations from fifty to one and two hundred to one are not uncommon.

The largest water power plant at present in the United States was completed a year or two ago on the Susquehanna. It has an installation of 500,000 horsepower. But in some seasons the capacity of the plant drops off to as low as 30,000 horsepower.

The rivers of Europe, Asia and Australia have not the lake systems which permit a natural or artificial regulation of their flow from which the most economic development of their power sites is possible.

In the Zambesi, Africa does hold power possibilities, but the power sites on that river are located in an undeveloped interior far from those low cost shipping facilities which only the sea affords.

The Scandinavian countries are more fortunate in their water power resources. They produce large blocks of power; but the vital

## THE BEAUHARNOIS DEVELOPMENT

difference between the Scandinavian power sites and those on the St. Lawrence is that the manufacturer here is assured of power, not only for his immediate requirements, but for expansion in the years to come.

Contrast the water power situation in other countries with the magnificent St. Lawrence, which season by season and year by year rolls seaward unhampered, unharmed and unchanged by drought, by flood or by artificial means.

And so the region along the Upper St. Lawrence must make astonishing industrial studies for it is the only place in the world where abundant, low costs, continuous power is available at seaboard. And by seaboard I mean at present Montreal.

Bear in mind, also, that with this unique power situation, we can produce many industrial raw materials at a price to compete with the world. Our labor situation is sound. And access to markets—or raw materials—overseas is provided by the St. Lawrence.

In addition, our inland waterways provide the lowest cost transportation to the heart of the U.S., which, if not the greatest nation on earth, is at least the largest consumer of manufactured products anywhere.

The industrial use of power cannot fail but to grow immeasurably. Scientific research, mass production, and the increasing keenness of competition must bring about an ever increasing consumption of power in industry. The development experienced in the electro-chemical and the electro metallurgical industries during the past ten years is but indicative of what will take place during the years up to 1940 or to 1950.

Allow me to quote but one instance of the important part which power plays in these new, and what I might call modern industries.

Like many other present day industries, the Aluminum Company of America requires large quantities of power in its manufacturing processes. This company turned to the Saguenay where at Arvida they had 1,000,000 potential horsepower. Two hundred thousand horsepower is being developed and 800,000 horsepower awaits the future needs of that company.

Now the power site at Arvida is but 20 miles from the deep water navigation on the Saguenay. Yet the Aluminum Company found it cheaper to place its plant beside the power site, rather than to place the plant at deep water navigation and lead the electric energy through transmission lines, twenty miles to deep water navigation.

It was found cheaper to haul the aluminum ore to the plant, and then haul the aluminum pigs by rail to the head of navigation on the Saguenay rather than to erect a 20 mile transmission line from Arvida to Chicoutimi. This situation reveals to you how important a part electric power plays in many of our modern industries.

With this and kindred situations in mind, I reiterate that the next few years will witness along the St. Lawrence an immense expansion of industry comparable to the developments which have occurred in the industrial regions of Europe and of the United States. The Beauharnois development is only a prelude to such an industrial growth—a growth which may seem visionary and optimistic to you, but to me it seems certain.

## CHAPTER NOTES

### MONTREAL

Reported by H. W. Blunt, C.A.

A whistle shrieks, a bell clangs and with squealing brakes and hissing steam the Ottawa Express comes slowly to a stop before the Prince of Wales' Salon, in the Windsor Hotel. It is the night of Thursday, January the twenty-second, and the Express that has just arrived brings a distinguished passenger to honor the occasion of the Mid-Season Dinner. He is none other than the Deputy Chief Commissioner of the Board of Railway Commissioners for Canada, Lieut.-Col. Thos. Vien, K.C., who honors Montreal Chapter on this evening dedicated to the mightiest force in the march of modern civilization—"Transportation." (Through the courtesy of the Northern Electric Company the arrival of the Ottawa Express was so perfectly reproduced that it caused no little consternation amongst the two hundred guests and members assembled.)

At the head table Col. Vien was met and welcomed by leading representatives from every branch of transportation in Canada. From the railways he was greeted by George Stephen, John Leslie, H. J. Humphrey, E. E. Lloyd and C. E. Jefferson, respectively vice-president in charge of traffic, vice-president, assistant to the vice-president, comptroller and freight traffic manager of the C.P.R., and S. J. Hungerford and J. J. Yates, respectively vice-president and general treasurer of the C.N.R. Steamship and aircraft services brought a cordial welcome to the guest of honor through their representatives, L. G. Burns of the Canada Steamship Lines, and Capt. A. F. Ingram of Canadian Airways. Not to be outdone, motor car and motor bus transportation presented their felicitations through the presence of A. Riopel of Legare Automobile Company, and F. Farewell of Provincial Transport Company.

Among the other eminent guests present were: James A. Stoneman, Commissioner of the Board of Railway Commissioners; Dr. Edouard Montpetit of the University of Montreal; Col. Wilfrid Bovey, of McGill University; R. A. C. Henry, vice-president of Beauharnois Power Corporation; A. A. Gardiner, of the Traffic Club; J. H. Van Sickles, of the Imperial Tobacco Company; Lorenzo Belanger, C.G.A., C.P.A.; John T. Steven, of the Bank of Montreal; R. Laplant, of La Banque Provinciale Du Canada; A. G. Yon; P. J. McCaffrey, chief inspector of taxation; S. Godin, Jr., and F. Philie, treasurer of the City of Montreal.

In order that the various transportation officials present might feel thoroughly at home, miniature models of the services with which they were associated decorated the head table. Rail transportation was represented by a model of the famous C.N.R. "6000" locomotive, and land transportation was symbolized by a model automobile. Man's mastery of the sea was visualized in the model of a mighty C.P.R.

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"Empress" steamship, while his latest conquest of that element which has cost so many lives, the Air, assumed an added significance with the presence of a model 'plane. A feature of the decoration particularly pleasing to the railway officials were the place cards which depicted one of the newest locomotive models.

Col. Vien was introduced by George Bowden, Chairman of Montreal Chapter, who in his usual able manner outlined the distinguished career of the speaker as a lawyer, politician and railway commissioner. He spoke with regret of Col. Vien's resignation from the Board of Railway Commissioners, where he had labored so conscientiously and diligently for the good of his country.

In his introductory remarks Col. Vien stressed the advantage and necessity of the services of the cost accountant for the welfare of industry. He then proceeded to outline the history of the iron road in England and the Dominion.

"As early as 1630," he began, "a certain Master Beaumont had laid down broad wooden rails near Newcastle, in England, on which a single horse could haul fifty or sixty bushels of coal. In 1801 the first public line, the Surrey Iron Railway, was chartered, but it was not until 1825 that the Stockton & Darlington Railway proved that the iron way could be used by the general public as well as by the colliery owner."

"Canada owed her first railway as well as her first steamboat to Montreal. On February 25th, 1832, a charter was granted for the construction of a railway from Laprairie on the St. Lawrence to St. Johns, Quebec. The right-of-way was sixteen miles long. The work was commenced in 1835 and the railway was opened to traffic with horses in July, 1836, and first worked with locomotives in 1837."

From these humble beginnings the speaker traced the course of events that added mile upon mile to the road of steel. At length the dream of the idealist materialized, and a railway was completed which stretched from the Atlantic to the Pacific, across the breadth of Canada.

The chairman called on Lorenzo Belanger to move the vote of thanks, which he did in his usual eloquent manner. Among the other speakers listened to with interest were: George Stephen, A. E. Gardner, Dr. Montpetit and Colonel Bovey, each of whom stressed the role played by transportation in the development and unity of Canada.

A pleasing feature of the evening was the presentation of a cabaret, which included several novel Oriental numbers calculated to delight the heart of Terpsichore. Salons "B" and "C" added further enjoyment to the occasion, for the many who partook of the generous hospitality of the reception committee, while abundant supplies of cigars and cigarettes, provided through the generosity of two of Montreal's leading tobacco manufacturers, added the final touch to a most successful and enjoyable mid-season dinner.

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### HAMILTON

Reported by R. Dawson.

At the annual meeting of Hamilton Chapter, held on April 1st, Messrs. A. J. Mouncey and H. M. Ross led a discussion of members' problems which proved extremely interesting to those who attended.



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The result of the ballot on officers and directors was declared as follows: Chairman, A. J. Mouncey, The Norton Co., of Canada, Ltd.; vice-chairman, H. M. Ross, Mercury Mills Ltd.; secretary-treasurer, R. Dawson, The Hoover Co., Ltd. Directors: Andrew Ballantyne, Firestone Tire and Rubber Co., Ltd.; K. M. Horton, Cosmos Imperial Mills, Ltd.; H. J. Farnan, National Steel Car Co., Ltd.; A. E. Keen, C.A., Thorne, Mulholland, Howson & McPherson; M. I. Long, C.A., Clarke, Houston & Co.; A. C. Fraser, Steel Co. of Canada, Ltd. Representatives on Dominion Board: A. J. Mouncey, Norton Co. of Canada, Ltd.; H. M. Ross, Mercury Mills, Ltd.; S. E. LeBrocq, Steel Co. of Canada, Ltd.; G. E. F. Smith, C.A., Richardson, Smith, Ferrie & Co.

The closing banquet of Hamilton Chapter, held at the Royal Connaught Hotel on April 10th, was one of the most successful and at the same time one of the most enjoyable in the history of this Chapter.

Edmond S. La Rose, comptroller of the Bausch & Lomb Optical Co., Ltd., of Rochester, N.Y., was the guest speaker, and his discourse on "Budgetary Control" was one which will long be remembered by those who were fortunate enough to hear it.

Certainly Mr. La Rose, in a very masterly manner, demonstrated his very wide knowledge of, and his sound experience in, his subject, and by means of illustrated graphic charts he made his listeners understand very thoroughly what he was talking about.

The gathering was a very representative one, including members from Montreal, Toronto and Central Ontario Chapters.

This is the closing meeting of the Hamilton Chapter, but the members will certainly not lose touch with each other during the summer months if the new executive has anything to say about this.

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## CENTRAL ONTARIO

Reported by Carl R. Dorschell, Secretary-Treasurer.

Our Chapter held its annual dinner at Kitchener, on April 16th, in the Crystal Ball Room of the Walper House. The attendance was somewhat disappointing as only twenty-three were present. Unfortunately Mr. George Earnshaw, our newly elected chairman, was unable to be present on account of illness. The chair was taken by vice-chairman Carl J. Heimrich, L.A., who conducted the meeting in very capable manner.

Following the saying of grace by Alan Arnold, the party sat down to an excellent dinner, prepared by the Walper House chef and his staff. The musical part of the programme was well looked after by the Twin City Quartette, composed of Messrs. Jacob, Chantz, McPhail and Connor. Their contributions consisted of several numbers by the quartette and solos by Mr. R. Connor. Mr. Tailby, our former chairman, acted as accompanist to the singers. Alan Arnold entertained the assembly with several amusing anecdotes. A number of the Galt contingent were disappointed because there was no "Schnitz" pie on the menu, this delicacy having made quiet a hit with the boys from the Scotch town at the previous annual dinner in Kitchener.



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The speaker of the evening, Mr. T. Norman Dean, M.A., M.S., of the Workmen's Compensation Board of Ontario, was introduced by the general secretary, Mr. W. A. McKague, M.A. Mr. Dean's address on "Workmen's Compensation As An Item of Costs," was perhaps the most unusual and unique talk which the writer has had the privilege of hearing. The speaker showed by his talk that he was a man who had given many hours of his time to studies and books of various kinds. He quoted the Bible freely and compared its lessons and teachings with mathematics, a subject which is a special hobby of Mr. Dean's. He also quoted other well-known authors and authorities to drive home certain points in his speech. While his work is more or less along the line of statistics, the speaker avoided this phase as much as possible because as he so drolly put it, "Some people regard the statistician as the lowest form of human being." Following the speech by Mr. Dean, the meeting was thrown open for questions, and the speaker was kept busy for some time answering queries relative to Workmen's Compensation problems. All questions were answered promptly and clearly by Mr. Dean, who stated that he would be at all times willing to assist the members of the Society with any of their compensation problems.

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### WINNIPEG

Report by J. Parton, C.A., Chairman, Winnipeg Chapter.

This being the third year of the history of the Chapter, your Directors expected a rather difficult period. As is so often the case when an association starts up with a fairly large membership and great enthusiasm, some of the original members drop off for one reason and another, and we now feel that we have got down to a solid basis on which to build up our Chapter. While our membership is not particularly large in proportion to the other chapters, we are maintaining our quota.

During the year under review, and including to-night, we have held eight regular meetings, there being no meetings in the summer months of June, July and August, and one meeting being dropped due to the sudden indisposition of the speaker and our inability to get a substitute at short notice. The meetings have not been as well attended as we would have liked, possibly due in a certain measure to the dates conflicting with the meetings of the Canadian Credit Men, and we hope next year that the dates can be so arranged that nobody will be debarred from attending on this account.

Your executive have held six meetings in addition to the general meetings, for the purpose of discussing various problems in connection with the running of the Chapter.

During the year we had the pleasure of a visit from Mr. McKague, the General Secretary to the parent organization, which was very helpful and encouraging in that we found that other chapters suffered from the same difficulties that we did.

While it might be invidious to pick out any particular member for special mention, we feel that the large amount of work done by Mr. McVey in drawing up our programme and securing speakers for the various meetings should be acknowledged, and we feel sure that the members will join us in expressing our appreciation of the hard work that Mr. McVey has done.

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While the speakers have been uniformly good throughout the year, we think that special mention should be made of the talks by Mr. Klein of the Hudson's Bay Company and Mr. Malby of the Winnipeg Hydro Electric. Both these gentlemen went to a large amount of trouble in preparing charts, etc., with which to illustrate their addresses and were extremely interesting.

It has been suggested, as mentioned at a recent meeting, that a question box be instituted, and we hope the members will take full advantage thereof, since a large proportion of the benefit to be gained from an organization such as our own is derived from discussions and practical problems thrashed out in front of the membership.

We look forward to the future with optimism, believing that the period of depression is practically over and that with better business conditions it will not be difficult to increase our membership and make the Chapter of great assistance to cost accounting in this city.

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### VANCOUVER

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Reported by J. J. Plommer, C.A.

The first annual banquet of Vancouver Chapter of the Society was held in the Italian Room of the Hotel Vancouver, on March 24th last. At 6.45 p.m. 31 members and guests sat down to a dinner, the excellence of which was later testified by everyone present. At the close of dinner Mr. H. D. Campbell, C.A., Chairman, introduced the guests of honor as follows:

Professor J. Friend Day, B.A., M.A., associate professor of economics and head of the Faculty of Commerce at the University of British Columbia; Mr. Picton Davies, baritone, and his accompanist, Mr. W. Cook; Mr. A. Milne, tenor; Mrs. Dadye Harvey Hill, elocutionist and dramatic speaker.

After some songs and recitations by the guest artists, Professor Day announced that he would address the dinner on the subject "Applied Cost Accounting in Economics of To-Day." It is hoped that it will be possible to have this address published in the magazine at a later date.

At the close of Professor Day's address, the chairman called to order the annual meeting of the Vancouver Chapter. The secretary read the minutes of the two inaugural meetings of September 9 and 12, 1930.

The auditor's report was read and adopted, showing a balance of cash on hand as at February 28 of \$24.93.

The chairman next declared the meeting open for the nomination of nine directors. The following nominations were received: H. D. Campbell, C.A.; J. S. Dull, R. V. Kirkby, J. Harvey, C.A.; G. R. Baird, J. J. Plommer, C.A.; W. Griffiths, C.A.; H. V. Cox, G. S. McGlashan, R. C. Girling, G. B. Harper; E. A. Cowley; out of which the first nine were elected to office.

Later, at a meeting of the directors, Mr. H. D. Campbell, C.A., was elected chairman, Mr. J. S. Dull, vice-chairman, and Mr. R. V. Kirkby, secretary-treasurer.

In a summary of Vancouver Chapter's work, chairman H. D. Campbell said:

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"I am very proud to have been the first chairman of the Vancouver Chapter of the Canadian Society of Cost Accountants & Industrial Engineers, which, as you all know, is a Dominion-wide organization. It has been most gratifying to your directors to find such manifest interest on the part of the members, and the wonderful support which they have given this Chapter during the past season. We at present have forty-three members, most of whom have attended the meetings regularly, and from the time of inauguration, the monthly meetings have been attended by from forty to forty-five men.

"On this occasion, I wish to particularly thank our secretary-treasurer and the other directors for the enthusiastic support they have given me, and for the untiring efforts they have put forward to make this Chapter a success from the start.

"When we first opened up in Vancouver, Mr. McKague, the Dominion secretary, remarked that we would be doing wonderfully well if we had twelve to fifteen active members, and I can safely say that of the forty-three members at present on the roll, there are very few who have not been regular in attendance and shown that they are anxious to see our organization prosper.

"I must also at this time thank the gentlemen who addressed our meetings and gave such instructive and educative addresses to our members, and I think you will agree with me when I say that these gentlemen apparently put much time and energy into the preparation of their subject matter.

"I feel sure that the parent organization in Toronto must be surprised at the progress of the Vancouver Chapter, as upon looking back on the returns of chapters in other provinces of this Dominion, I think Vancouver has something to be very proud of in this organization."

The last meeting of the Chapter for the 1930-1931 season was held at the Hotel Vancouver, on Tuesday, April 14th, and was addressed by Mr. George H. Hill, whose subject was "A Few Adventures in Cost Accounting and Conclusions."

Mr. Hill said that the practise of Cost Accountancy had always been attractive to him, since it seemed to provide a personal adventure which was lacking in purely financial accounting. This adventure had been increased in his experience by his engagement in supervising costs in connection with breaking down ammunition after the Great War. The firm with which he was associated had a large contract for this work, for which purpose the materials were collected at twelve or thirteen "factories" in Northern France and Belgium. Mr. Hill in the first instance had charge of the accounts at one of these factories. Descriptive of the work of this plant, he read an essay prepared by him at the time on "Demobilizing Ammunition." The costing work done at these depots consisted mainly of elaborate wages analyses, which had to be so prepared as to clearly show the amount of the different metals recovered from the stocks of the various calibre shells.

Mr. Hill subsequently moved to the company's head office at Boulogne, to control the cost records of all the operations, and the information which he consolidated was used as the basis for a tender for the stocks of ammunition at the British depots. After securing the British contract, Mr. Hill took over the supervision of costs in

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respect of the 40 or 50 depots in England, Ireland and Scotland. The British operations had one advantage over the French operations, as it became possible to put very much on piece work, which had not been possible in France owing to the variety of foreign labor.

In the British costing scheme, daily reports were made by all depots to head office, and all the information was assimilated in such a form as to make one shillings worth of direct labor an efficiency unit.

The address of Mr. Hill was much appreciated by the members, who expressed themselves in a hearty vote of thanks. They then parted for the summer season, with the assurance of the chairman that they could look forward to a resumption of the Society's activities on September 15th next, and a series of addresses as instructive and informative as those in the sessions just closed.

## COST LITERATURE

### RECEIVED IN APRIL

**I**NTERNAL Analysis and Interpretation of Accounting Information. A. J. Paget. National Association of Cost Accountants, April 1, 1931.

Obsolescence and Organization. Cost Accountant, March, 1931.

Survey of Office Practice and Trends. J. R. Morse. Society of Industrial Engineers Bulletin, February-March, 1931.

Hoskold's Formula, Its Limitations and Misuse. L. A. Carman, C.P.A. American Accountant, April, 1931.

Department Expense. R. A. Maxwell. American Accountant, April, 1931.

Industrial Development and Its Relation to Accountancy. H. G. Howitt, F.C.A. The Accountant, April 11, 1931.

Some Aspects of Goodwill. R. Walton, A.C.A., A.I.S.A. Accountants' Journal, April, 1931.

Shipping Accounts. R. E. Collins, A.C.A. Accountants' Journal, April, 1931.

Cost Analysis and Budget for the Master Plumbers' Association. J. E. Eberly, C.P.A. National Association of Cost Accountants, April 15, 1931.

Consolidation Accounting. E. J. Gessner. National Association of Cost Accountants, April 15, 1931.

Accounting for Fleet Corporation Vessels. W. A. Clader. Journal of Accountancy, April, 1931.

Some Accounting Methods Peculiar to Motion Picture Producers and Distributors. Part 2. A. Kaplan. Certified Public Accountant, April, 1931.

Major Problem Created by the Machine Age. A. Andersen. Certified Public Accountant, April, 1931.

Recent Developments in Works Management in the Automotive Field. J. Geschelin. Society of Industrial Engineers Bulletin, February-March, 1931.

